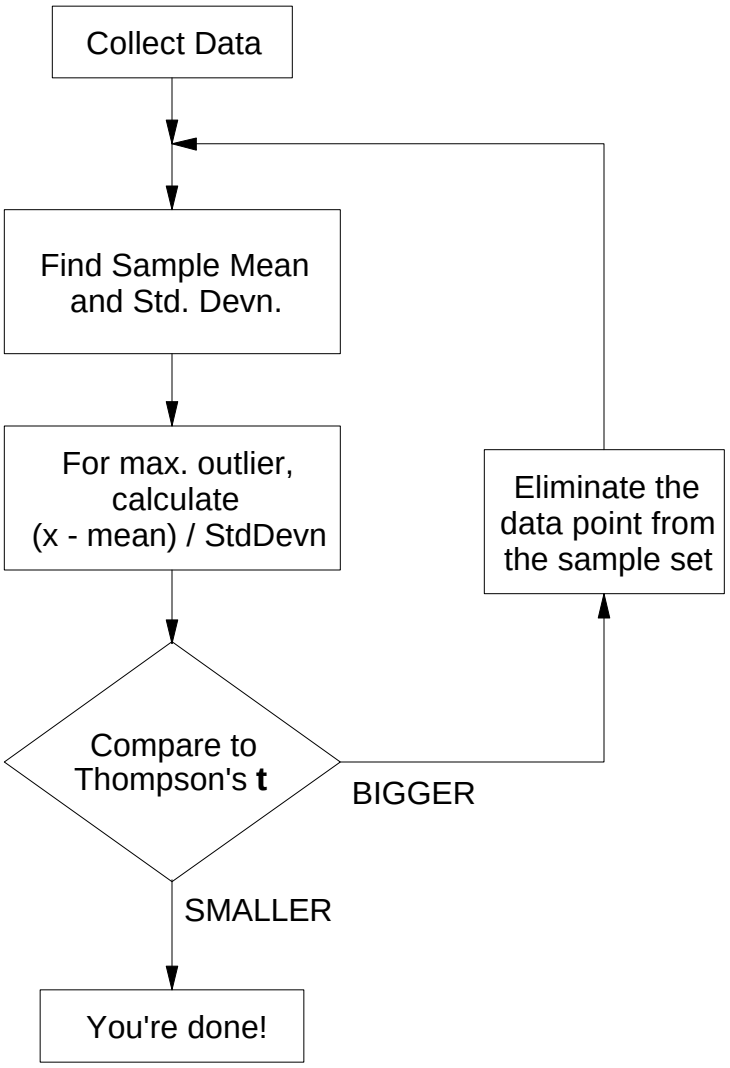
METHOD OF REJECTING BAD DATA POINTS

First, a flow chart. Then a table of Thompson's τ. Finally, a worked example.



Values of Thompson's t

n	*t*	*n*	*t*
3	1.150	22	1.893
4	1.393	23	1.896
5	1.572	24	1.899
6	1.656	25	1.902
7	1.711	26	1.904
8	1.749	27	1.906
9	1.777	28	1.908
10	1.798	29	1.910
11	1.815	30	1.911
12	1.829	31	1.913
13	1.840	32	1.914
14	1.849	33	1.916
15	1.858	34	1.917
16	1.865	35	1.919
17	1.871	36	1.920
18	1.876	37	1.921
19	1.881	38	1.922
20	1.885	39	1.923
21	1.889	40	1.924

EXAMPLE

While a vehicle was traveling at an essentially constant speed, a radar gun was used to measure the following speeds (mph):

58, 60, 61, 62, 61, 57, 52, 67, 65, 54, 61, 68, 58, 50, 53, 64, 61, 55, 55, 56, 61, 58, 67, 53, 62, 68, 57, 63, 72, 58

Should you reject any measurements from your analysis? If so, which ones?

STEP 1: (30 samples)

$\bar{x}$ = 59.90
S = 5.352
τ = 1.911

Max. outlier is 72, gives $\frac{(x-\bar{x})}{S}$ = 2.261 reject this one since 2.261 is bigger than 1.911

Min. outlier is 50, gives $\frac{(x-\bar{x})}{S}$ = -1.850

STEP 2: (29 samples)

$\bar{x}$ = 59.483
S = 4.925
τ = 1.910

Max. outlier is 68, gives $\frac{(x-\bar{x})}{S}$ = 1.729

Min. outlier is 50, gives $\frac{(x-\bar{x})}{S}$ = -1.925 reject this one since 1.925 is bigger than 1.910

STEP 3: (28 samples)

$\bar{x}$ = 59.821
S = 4.659
τ = 1.908

Max. outlier is 68, gives $\frac{(x-\bar{x})}{S}$ = 1.755

Min. outlier is 52, gives $\frac{(x-\bar{x})}{S}$ = -1.679 so don't reject any more

FINAL REDUCED DATA SET IS:

58, 60, 61, 62, 61, 57, 52, 67, 65, 54, 61, 68, 58, 53, 64, 61, 55, 55, 56, 61, 58, 67, 53, 62, 68, 57, 63, 58